

CLAIMS

What is claimed is:

1. An accumulator fuel system for an internal combustion engine having a plurality of engine cylinders, the fuel system including:

an accumulator fuel volume for supplying high pressure fuel to one or more of a plurality of injectors, each of which is arranged to supply fuel to an associated one of the engine cylinders,

wherein the accumulator fuel volume is integrated within an engine component provided for a purpose other than that solely of an accumulator fuel volume for storing high pressure fuel.

2. The accumulator fuel system as claimed in claim 1, wherein the system includes a rocker shaft upon which a rocker member is pivotally mounted, wherein the rocker member is arranged to control one or more inlet and/or exhaust valves of an associated engine cylinder and wherein the accumulator fuel volume is integrated within the rocker shaft.

3. The accumulator fuel system as claimed in claim 2, wherein the rocker shaft is provided with a first axially extending passage for receiving a lubricating fluid and a second axially extending passage defining the accumulator fuel volume.

4. The accumulator fuel system as claimed in claim 2, including the plurality of injectors, wherein the accumulator fuel volume is arranged to supply fuel at a first pressure level to one or more of the plurality of injectors, and wherein each injector includes an additional pumping plunger for pressurising fuel to a second pressure level higher than the first pressure level.

5. The accumulator fuel system as claimed in claim 4, including a first rocker member for controlling one or more engine cylinder inlet valves, a second

rocker member for controlling one or more engine cylinder exhaust valves and a third rocker member for transmitting drive to a pumping plunger of an associated injector, wherein the first, second and third rocker members are pivotally mounted upon the rocker shaft.

6. The accumulator fuel system as claimed in claim 4, wherein the rocker shaft has a longitudinal axis which is arranged to extend substantially perpendicular to a longitudinal axis of the pumping plunger of an associated injector.

7. The accumulator fuel system as claimed in claim 4, wherein the injectors are electronic unit injectors.

8. The accumulator fuel system as claimed in claim 4, wherein each injector is associated with an electronic unit pump for increasing fuel pressure to the second pressure level.

9. The accumulator fuel system as claimed in claim 1, wherein the fuel system includes an engine cylinder head within which a plurality of engine cylinders are defined, and wherein the accumulator fuel volume is an integral part of the engine cylinder head.

10. An accumulator for use in a fuel system of an internal combustion engine, wherein the accumulator is a rocker shaft of the engine, the shaft being provided with a first axially extending oil passage for lubricating oil and a second axially extending passage defining an accumulator fuel volume for high pressure fuel for delivery to one or more injectors of the engine.

11. An accumulator for use in a fuel system of an internal combustion engine, wherein the accumulator is an engine cylinder head of the engine, the engine cylinder head being provided with a passage defining an accumulator fuel volume for high pressure fuel for delivery to one or more injectors of the engine.

12. An accumulator fuel system for an internal combustion engine having a plurality of engine cylinders forming combustion chambers and one or more inlet and/or exhaust valves associated with the engine cylinders, the internal combustion engine further including a plurality of components for delivering fuel to the combustion chambers and controlling combustion therein, comprising an accumulator fuel volume for supplying high pressure fuel to at least one injector, the at least one injector being arranged to supply fuel to one of the combustion chambers, the accumulator fuel volume being formed in one of the plurality of components of the internal combustion engine.

13. An accumulator fuel system, as set forth in claim 12, the plurality of components of the internal combustion engine including a rocker shaft and a rocker member pivotally mounted to the rocker shaft and being arranged to control one of the inlet and/or exhaust valves, the accumulator fuel volume being formed in the rocker shaft.

14. An accumulator fuel system, as set forth in claim 12, further including an engine cylinder head, the accumulator fuel volume being formed in the engine cylinder head.

15. An accumulator fuel system for an internal combustion engine having a plurality of engine cylinders forming combustion chambers and one or more inlet and/or exhaust valves associated with the engine cylinders, the internal combustion engine further including a plurality of components for delivering fuel to the combustion chambers and controlling combustion therein, comprising an accumulator fuel volume for supplying high pressure fuel to at least one injector, the at least one injector being arranged to supply fuel to one of the combustion chambers, the improvement comprising that the accumulator fuel volume is formed in one of the plurality of components of the internal combustion engine.